Eagle Ridge Phase 2 EIS

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Also attached are EEPAC's comments on the Tributary C Storm/Drainage & SW Management, Transportation & Sanitary Trunk Servicing Works EIS dated March 4, 2013 (submitted May, 2013) as some of the comments are germane to the development of this subdivision

Please note, EEPAC did not have the 2009 EIS which included the aquatic assessment, so we could not give the aquatic assessment a rigorous review.

THEME # 1: Ground Water Dynamics and Ecological Function

A potential concern would be the influence of development on ground water dynamics. Brook trout are dependent on areas of ground water upwelling for thermal refuge and to spawn. Any heavy draws on the ground water supply or reduction in infiltration could negatively impact the populations. Furthermore, any water draining from storm water ponds into thermal refuge areas could negatively impact the population.

The Functional Design for the Storm Water Management (SWM) system indicates that the infiltration rate of the developed area will be maintained post development by the SWM system. However, the location of upwelling water from the SWM system is also important for the maintenance of the natural heritage features and the remnant brook trout population. The overland flow and area of infiltration will be different post development relative to pre-development (i.e. infiltration is restricted to the SWM pond post-development).

EEPAC wonders if the current location of upwelling sites and/or the hydraulic pressure of the upwelling sites will change after development? Brook trout not only require upwelling for thermal refuge in the summer, but they also require strong upwelling for successful spawning. If the location or hydraulic pressure of the upwelling sites change, the brook trout population may have poor spawning success or experience thermal stress during the summer. The post development monitoring plan recommends monitoring the snake hibernacula and meadow restoration, but not the ground water functioning.

There are two main points to consider with respect to dewatering and temperature:

Water temperature and geochemistry can be altered by dewatering. Construction is usually done in the summer months, so water pumped from the ground will generally be cooler than the ambient

temperature. As a general rule of thumb, deeper water will be less susceptible to seasonal temperature variations than water that is close to, or at the surface. Obviously the longer the water spends at the surface, the warmer it will get as well (assuming, of course, that the surface is warmer than the groundwater). For example, ambient groundwater could be ~11°C, the surface temperature could be ~25°C (or warmer in the direct sunlight), so any water abstracted would be warmed up after it got to the surface. Furthermore, dewatering could also alter the geochemistry of the groundwater (change in pH or oxygen levels).

Dewatering activities may also influence groundwater infiltration into the cold water stream (i.e. reduce the amount of groundwater entering the stream). For example, if they were dewatering adjacent to the stream, they could reduce the amount of water that naturally flows to the stream, or even end up taking water from the stream depending on the scale of dewatering. Reducing (or eliminating) groundwater inflow into the stream could increase the water temperature of the stream as the cooler groundwater probably keeps the stream cool.

***Recommendation 1*:** Confirmation of no negative impact on the location or hydraulic pressure of the upwelling site due to construction or dewatering is required before any site work or dewatering is carried out.

***Recommendation 2*:** EEPAC recommends the post development monitoring of the ESA area to ensure the functioning of the ground water upwelling areas is not impacted by the development.

Theme #2 – Restoration Plan and Monitoring

The consultant recommends meadow restoration as a compensation measure. However, a restoration plan including more forested area would better support the functioning of the ESA. The root systems of trees help to increase ground water recharge (development is in a recharge area), which is essential for the year round functioning of ground water upwelling areas. More trees would also help protect the edges of the marsh and swamp areas, while also providing shade to these wetland areas (tree plantings restricted to area along Tributary "C" east of the ESA).

For the tributary, the best vegetation to plant on the stream banks would depend on the width of the watercourse, but you would ideally want something that is relatively fast growing and could provide adequate shading to protect the tributary from solar radiation. A good mix of grasses, shrubs, and trees would help to provide shade, run-off control, and habitat for invertebrates. Brook trout are reliant on invertebrates that are derived from both stream and terrestrial sources for food.

***Recommendation* 3:** Plant more trees along Tributary C when restoring the agricultural areas to help support the functioning of the ESA.

<u>Environmental Management Plan (EMP) Recommendation 14: Meadow Restoration - The planting list</u>

EEPAC has the following comments solicited from the restoration ecologists listed at the beginning of this report:

Species like Canada Wild Rye in the mix will certainly help as they establish quickly. It could be worth adding in swamp milkweed – it doesn't necessarily need it wet. In any lower areas, native Joe Pye Weed

could be a nice addition too. In addition, close enough to those wet habitats some Marsh Marigold and possibly some native Iris.

Ideally, the seeds would be sown directly after a final harvest of corn or soy, meaning that weed control needs should be minimal. If not currently in active agricultural production, then good site preparation, including several round of spraying and possibly tilling, would be prudent prior to sowing seeds. You need to really ensure that you let the current seed base come up and then spray it - hopefully twice so that you get the vast majority of existing seed bank.

If the field is not currently in agriculture then doing extensive site prep is a must to ensure success of the planted native species. Another thing to consider is using a cover crop such as white millet. Many seeds don't germinate in the first year and leave the field quite open to influx of non-native seed.

Regarding planting timing, on Pelee Island, the Nature Conservancy has always planted in the fall simply because we collect the seeds, don't have a place to store them, so we "store" them by planting them right away. This seems to work perfectly well. Our staff ran out of time to plant this past fall, so we have stored the seeds and will plant this spring, so we will see if it makes any difference. The key thing is that the seeds are stored by someone with some seed-storing expertise and facilities – some species will only germinate after they have been exposed to something resembling "winter" – i.e. need to be " cold – moist stratified". St Williams Nursery and Ecology Centre can do this, for example. In Norfolk, we have planted both in spring and fall, and I don't think we have noticed any obvious differences. I like the idea of fall planting as it most closely mimics what happens in nature – plants produce seeds, they fall out, sit for the winter, then grow. Logistical challenges of weather/ soil moisture can dictate when planting ends up happening – heavy, clay soils can take a while to dry out, so mechanised spring planting can be more challenging on these sites – but can also be impossible if we have a wet fall.

Mowing in the fall is not ideal, as it can remove flowers and slow seed production of the desirable, native plants, and may also damage habitat for overwintering insects. This method is employed at some sites, but not at those undertaken by the Nature Conservancy. Depending on the size, some judicious spot-spraying of patches of problematic species such as white sweet-clover could happen in early spring, before the native species emerge. Woody invasives might need to be dealt with too over time – buckthorn, autumn olive and European alder can sneak in quite quickly and should be treated before they get too big/ dominant.

Recommendation 4: The planting plan be adjusted based on the comments above and revisions made where appropriate and included in the conditions of development.

Recommendation 5: Consideration be given to contacting Dr. McFarlane to advise on the timing and follow up to the restoration plan

In the Environmental Management Plan, recommendation 16 relates to the monitoring of the restoration planting.

***Recommendation* 6**: Monitoring of the restoration planting should follow the regime suggested below from the Nature Conservancy, noting that the suggested two year time frame included in the EMP is likely insufficient:

In the first summer, expect a range of non-native, common agricultural weeds, often annuals. In year two, expect to see these give way to the planted, native species. The objectives of restoration are first and foremost to establish as many native plant species as possible, and to not allow the establishment of non-native invasive species. Monitoring should focus on this. For example, look for autumn olive, buckthorn, quack grass and Canada thistle, common reed, and conduct monitoring to deal with them upon sight whenever possible. Looking for these species can be easier later on in the fall, as they remain green for longer than the native plants.

- We simply wander around a write down every species we come across; it might be useful to append some sort of abundance code, but again, a focus on what you need to know is important
- We need to know if we need to come back with a chainsaw or just loppers, and what sort of volume of glyphosate we might need, so we're not going to bother counting lamb's quarters, for example. For native species, we compare our list of observed species with our planting list.
- We are able to "get away with" a fairly low key monitoring approach like this because we do actually have a much more detailed system on one key restored site – we have 170 2 x 2 m plots set up, and have been collecting % cover for each species for 10 years now. We collect these data in the 3rd week of July (Norfolk County). We miss flowering season for asters and goldenrods, and similarly miss really early season stuff, but we do our best. This is fine, but does take a lot of time and our ongoing objectives with this work are something we are constantly trying to clarify. I don't necessarily recommend that every site needs such a detailed system – again, thinking hard about what you need to know is paramount.
- Some species do take a while to establish in an easily identifiable way. One example we have found of this is butterfly weed – it seems to take a few years to really show up. If you really need to know if every species you planted establishes, then you might consider checking in on the site for longer than just 2 years – 3 or even 4 years.
- If you are trying to create habitat for a specific species, via planting native plants, I would still recommend a focus on native vs non-native plants, especially early on, but you would also want to add in a check for your species of interest, and perhaps other components of its habitat e.g. structure, specific species composition, etc. This sort of data collecting might need to happen over several months – i.e. breeding bird season, fall, even winter.
- Photos are always good! Collect some actual data too, but take some pics from a few standardised angles each year.
- On a somewhat related note, I would also recommend that restoration sites are maintained with regards to invasives many years down the line. I appreciate how unrealistic this may be or seem, but restored areas are prone to invasive species for a long time, and I have seen several which had a lot of restoration money poured into them for 1 – 2 years, but then have been ignored and have turned into an autumn olive or buckthorn mess, which is of very limited value to anything.

Recommendation 7: There is a similar project undertaken in the Grand River Watershed at Bauman Creek. Funding has been obtained from the Loblaw Water Fund. Consideration should be given to working with the UTRCA to find funding that could be used to enhance the work being done by the proponent.

Theme #3: Remainder of Environmental Management Plan

EEPAC is generally supportive of the recommendations except as follows:

- Recommendation 8 re fencing should be a requirement, particularly for the lots and medium density unit closest to the wetland.
- Recommendation 9 re subdivision by laws. EEPAC is not aware of such by laws and doubts that they are enforceable by anyone. They should be included as part of the by-laws of a condominium corporation if one is formed. EEPAC believes a homeowner package followed up near to assumption by a mailing of "Living with Natural Areas" along with signage would be more effective.

Recommendation 8: Signage be installed at various points (such as the active park adjacent to the wetland. The signage include information on why this wetland is unique (e.g., the SWM4-1 mixed swamp is very usual in London) and why it is important to protect it. Advice from Environment and Parks Planning and / or EEPAC should be sought as to wording and placement. EEPAC does not recommend including information about the brook trout.

Recommendation 9: Residents receive the standard home owner package along with a follow up mailing of "Living With Natural Areas" when the subdivision is assumed.

THEME #4 – Thames Valley Parkway location

EEPAC does not support the location of the TVP close to either the Woodeden woodland nor the wetland. It also appears from p. 15 of Ricor's June 2016 Final Engineering Report for the proponent, that the pathway is to be 10 m wide in total, 3 m for the pathway and a 3.5 m grassed buffers on either side. The buffers appears to be "extra wide" compare to other areas, particularly if this width cuts into the ESA (it is difficult to tell from materials supplied to EEPAC. It appears that filling to provide a more gradual slope to Kain's Woods is unnecessary if the TVP were to locate either along the Union Gas line on the east side of Woodhull Road, or if it used the Linkway or even the stormwater management pond path. These would provide more level and direct routes for users at a lower cost and require less reseeding and monitoring of the seed bank.

There is also unauthorized access to the Woodeden property that leads across private lands to the stormwater pond outlet below Tigerlily Road. By bringing bike users close to this access point, there is a risk of greater bicycle use in the nearby Kain's Woods ESA, where such use is prohibited.

Recommendation 10: In consultation with the proponent, the TVP be relocated as per one of the above options.